

Appl. No. 09/749,480
Amendment dated June 24, 2004
Reply to Office action of Mar. 24, 2004
Docket No. 6169-141

IBM Docket No. ROC9-1999-0084

REMARKS/ARGUMENTS

These remarks are made in response to the Office Action of March 24, 2004 (Office Action). As this response is timely filed within the 3-month shortened statutory period, no fee is believed due.

In paragraph 4 of the Office Action, claims 1, 2-4, 8, 10, 12, 14, 15, and 19-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,956,020 to D'Amico *et al.* (D'Amico) in view of U.S. Patent No. 6,323,846 to Westerman, *et al.* (Westerman). In paragraph 5, claims 6, 7, 17, and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Westerman in view of D'Amico, in further view of U.S. Patent No. U.S. 4,868,912 to Doering.

In paragraph 6, claims 5, 9, 11, 16, and 20 have been objected to only inasmuch as each is dependent upon a rejected base claim. The Examiner has indicated that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The Applicants have added claims 24 and 25 to clarify that the Applicants invention can be utilized with touchscreens based upon pressure sensitive stimuli. Applicants' methodology differentiates between stylus usage and finger usage upon a touchscreen based upon contact area. Applicants note that different methodologies are used for implemented touch-screen technology, including such technologies as resistive touchscreens, capacitive touchscreens, and surface acoustic wave touchscreens. Particular ones of these technologies do not discriminate among the type of objects making contact with a touchscreen, making it more difficult to differentiate the input generating object. The Applicants invention can be advantageously used in conjunction with systems in which contact size can be one of the few ways to determine whether contact with the touch screen occurs through a stylus or a body part.

Support for claims 24 and 25 can be found between page 14, line 20 and page 15, line 10. Various examples, throughout the application emphasize the advantage of using the invention with touchscreens relying upon pressure sensitive stimuli. For example, ClearPad noted at page 5, line 2 and the PALM touchscreen noted on page 2, line 15 illustrate touchscreens relying upon pressure sensitive stimuli.

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The Applicants respectfully note that claims 2 and 13 were canceled in previous responses.

Prior to addressing the rejections on the art, a brief review of the Applicants' invention is appropriate. The Applicants have invented a method and apparatus for distinguishing between a finger and a stylus using a touchscreen based upon contact area. The method does not require feedback from peripheral devices external to the touchscreen, but instead relies exclusively upon touchscreen contact size information as compared with contact criteria. Accordingly, the method is able to be implemented using software and/or firmware and standard hardware, requiring no expensive hardware modifications and/or cumbersome peripherals. Using the stylus/finger determination, one or more strategies for operation of a pointer and/or for presentation of a graphical user interface suited for control by a finger or a stylus can be implemented.

Turning to the rejections on the art, claims 1, 2-4, 8, 10, 12, 14, 15 and 19-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over D'Amico in view of Westerman. Referring specifically to claim 1 and 12, the Applicants claim the steps of:

detecting contact with said touchscreen;
generating contact information specifying a size of said detected contact with said touchscreen;
comparing said contact information corresponding to said detected contact with contact criteria, said contact criteria specifying a threshold contact size; and,
based on said comparing of said contact information, determining whether said contact was initiated by a finger or a stylus.

The Examiner admits that D'Amico does not teach the generating of contact information, specifying the size of the detected contact with the touchscreen, or comparing the contact information with threshold contact sizes. Applicants assert that there is no reason, based on the teachings of D'Amico, to be concerned with discriminating between touchpen and finger inputs based upon a size of contact. D'Amico explicitly uses a phase change to discriminate between touchpen and finger inputs, as shown in column 3, lines 59 and 60. No other means of discrimination is necessary for D'Amico, nor is any other means taught or suggested.

The Examiner, nevertheless asserts, without support, that one of ordinary skill would upon reading D'Amico desire an alternative means for determining whether contact was initiated by a finger or a stylus. This alternative means is inferred from teachings of Westerman that

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relate to ignoring palm inputs, based on contact size. Applicants point out that Westerman fails to teach or suggest using contact information to distinguish between a finger and a stylus and in fact makes no mention of a stylus usage whatsoever. Applicants assume that the Examiner is asserting that one should extend the teachings of Westerman pertaining to palm contacts to a stylus.

D'Amico, however, teaches away from this extension in that D'Amico teaches that all body contacts are to be handled in a single manner, a manner that differs from how stylus contacts are handled. Specifically, at column 4, lines 38, 44, D'Amico defines the terms "finger" and "hand" as used in the specification to refer to contacting the touchscreen "with the foot or other parts of the body "

It is therefore, improper, to analogize the teaching of Westerman relating to finger/palm contacts to being equivalent to teaching stylus/finger contacts, as asserted by the Examiner. Since, neither D'Amico, Westerman, nor any combination thereof teach or suggest that contact size should be used to determine whether a touchpad contact was initiated by a finger or a stylus. D'Amico and Westerman, therefore, fail to teach the claimed limitations of the Applicants invention. On this basis, claims 1 and 12 should be allowed.

Applicants respectfully assert that it is improper to combine the references of D'Amico and Westerman in the manner suggested by the Examiner. Applicants note that when combining references for § 103(a) purposes, the proposed modification cannot render the prior art unsatisfactory for its intended purpose. Additionally, the proposed modification cannot change the principle of operation of a reference.

According to column 56, lines 52-54 of Westerman, the purpose of detecting contact is to give users the freedom to rest the palms anywhere on the surface (of a touchscreen) where palm presses are ignored. The Examiner proposes using Westerman in a manner contrary to this expressed purpose when suggesting that combining Westerman with the D'Amico reference can "provide an application with the ability to perform different tasks and/or actions based upon the input." If the purpose of Westerman is to be served, contact area is used to ignore input before the input is sent to an application. Since the application is not to receive ignored input, no application specific actions can be taken that are dependent upon the contact area of the input.

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Therefore, the Examiners suggested actions cannot be taken without rendering Westerman unsatisfactory for its intended purpose.

Additionally, in Westerman (as shown in FIG. 1) ignoring palm touches means that the host computer system 22 never receives the palm input from the electrode scanning hardware 6. Similarly, ignored input in D'Amico is not conveyed from the controller 20 to the application 40. Accordingly, conveying ignored input to an application as suggested by the Examiner changes the basic principle of operation detailed in both D'Amico and Westerman.

Further still, the purpose for which Westerman detects contact (as detailed in diamond 754) is not relevant to D'Amico. That is, Westerman detects contact size to ignore palm inputs. D'Amico uses another method to ignore inadvertent inputs, such as users resting their palms. That is, D'Amico states at column 5, lines 16-25 that when the pen is being used, the controller may advantageously ignore inputs entered by finger or hand. For example, when the user's hand is resting on the touchscreen while writing, input caused by the hand is ignored for a calibratable period of time. Accordingly, the purpose of ignoring inadvertent contact taught by Westerman is not advantageous to D'Amico.

Applicants believe that the references of D'Amico and Westerman have not been combined based upon teaching or suggestions D'Amico or Westerman. The references are combined based upon impermissible hindsight, or knowledge gleaned only from the Applicants disclosure. Consequently, § 103(a) rejections with regard to claims 1-10 and 12-23 should be withdrawn, which action is respectfully requested.

Referring to claim 8 and 19, Examiner cites lines 2-6 of D'Amico as teaching "displaying an activated point in said touchscreen beneath said detected contact." D'Amico, however teaches receiving positional signals from the touchscreen and transmitting these values to an application. Nowhere does D'Amico teach displaying an activation point on the touch screen, which would require determining a contact area for the activation point and rendering this contact area as an image upon the display screen. Since D'Amico fails to teach or suggest displaying an activation point, the 103(a) rejections with regards to claims 8 and 19 should be withdrawn, which action is respectfully requested.

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Referring to claims 10 and 21, the Examiner asserts that D'Amico teaches presenting different interfaces depending upon whether a finger contact or stylus contact is determined. No reference to D'Amico is provided to support this assertion. Applicants note that D'Amico states at column 2, line 11-14 that "the ability of a properly programmed application to accept different types of inputs enables programs to accept finger inputs for particular tasks and pen input for other types of tasks." D'Amico, however makes no reference to providing different interfaces. Instead, D'Amico that teaches that when precise input is required, an application can change the input mode, thereby requiring pen input, as suggested by column 2, lines 14-16. Since D'Amico fails to teach or suggest presenting different interfaces, the 103(a) rejections with regards to claims 10 and 21 should be withdrawn, which action is respectfully requested.

In paragraph 5, claims 6, 7, 17, and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Westerman in view of D'Amico, in further view of U. S. Patent No. U.S. 4,868,912 to Doering. There is no motivation to combine the teachings of Doering with Westerman and D'Amico. Doering specifies an infrared touch panel that utilizes fundamentally different hardware and software, as shown in FIG. 1, than the capacitive touch screen system required by D'Amico. That is, Doering describes utilizing a plurality of light emitting elements and determining touch based upon interrupting light pathways. The types of "false hits" as defined in column 2, lines 37, are not equivalent to voltage differences that can be sensed within a capacitive touch screen system. There are no teachings or suggestions provided by D'Amico, Doering, Westerman, or any combination thereof showing how teachings that apply to light pathway systems translate other types of touch-screens. The techniques for differentiating between pen and finger contacts taught by D'Amico are not applicable to Doering, which is not based upon electrical current. D'Amico, Doering, and Westerman describe art based upon different technologies that behave in different manners.

Additionally, Applicants note that comparing Doering to Levy (cited in paragraph 5 of the Office Action) is improper, as Levy is not a valid art reference to apply to the present application.

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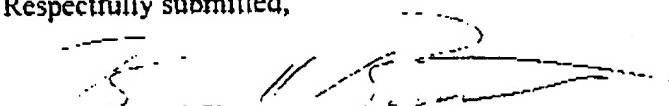
Because there is no motivation to combine Doering with D'Amico and Westerman, and since neither D'Amico nor Westerman teach detecting a duration of contact, the rejections to claims 6, 7, 17, and 18 should be withdrawn, which action is respectfully requested.

Regarding claims 24 and 25, the Applicants note that the teaching of D'Amico rely upon electrical characteristics of objects touching the touchscreen. That is, the technology utilized for touchscreen detection is dependant upon current differences and not upon the amount of pressure applied to the touchscreen.

The Applicants believe that this application is now in full condition for allowance, which action is respectfully requested. The Applicants request that the Examiner call the undersigned if clarification is needed on any matter within this Amendment, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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